ZABER

LLS Product
User's Manual
Firmware 5.00 and up

Last Update: December 10 2015
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Disclaimer

Zaber’s devices are not intended for use in any critical medical, aviation, or military applications or situations where a product's use or failure could cause personal injury, death, or damage to property. Zaber disclaims any and all liability for injury or other damages resulting from the use of our products.

Overview

The LLS series of dovetail linear slides should not be confused with our T-LLS series of dovetail linear slides. The "T-" prefix indicates that a stepper motor controller is built-in. For detailed specifications on the T-LLS series of linear slides with built-in controllers see http://www.zaber.com/products/product_group.php?group=T-LLS. The LLS series by comparison does not have built-in controller. It is instead designed to be used with our T-CD2500 or T-MCA external stepper motor controller.

Most LLS devices consist of our NM23A200 or NM23A200-D stepper motor attached to a custom dovetail linear slide. A variety of resolutions, speeds, travels, and mounting configurations can be accommodated with different slide and lead screw combinations. Because of the wide range of possibilities, our LLS series part numbers are created on a per order basis. As new customers request custom slides to meet their own requirements, this document will be updated to add new part numbers and setup instructions. If you are interested in a custom dovetail slide, please contact us to request a quote.

For specifications on the NM23A200 and NM23A200-D stepper motors see http://www.zaber.com/products/product_group.php?group=NM

For specifications on the T-CD2500 stepper controller (discontinued July 2009) see http://www.zaber.com/products/product_group.php?group=T-CD

For specifications on the T-MCA stepper controller see http://www.zaber.com/products/product_group.php?group=T-MCA

Operation with T-CD2500 or T-MCA controller

In most cases, there are only two instructions required to be sent to the controller to set it up for use with any LLS product. First, the controller must be set to default values by issuing the Restore Settings instruction with the appropriate peripheral Id for the motor. Then the Maximum Range setting must be set to an appropriate value for the slide and lead screw that the motor is attached to. See the T-CD or T-MCA user's manual for information on sending these instructions.

Operation with other controllers

LLS devices can also be used with non-Zaber controllers but some further information is required.

Connector Pin Diagram

A pin diagram for the connector can be found here: http://www.zaber.com/wiki/Manuals/T-MCA#Installation. This shows the mating connector on our T-CD or T-MCA series controller so looking at the end of the LLS connector you should see the mirror image.

Motor

The specs for the motors can be found on our website: http://www.zaber.com/products/product_group.php?group=NM.

Home limit sensor

The home sensor is a hall effect sensor triggered by a small magnet on the slide platorm. The default output signal (non-active) is in a high impedance state. When active the output is pulled low. If you wish to generate a TTL signal, you should add a pull-up resistor to 5V. Our T-CD and T-MCA controllers use a 10k pull-up resistor to 5V and also a 1uF capacitor to ground. The capacitor helps eliminate false home triggering in noisy environments.

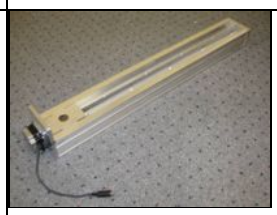
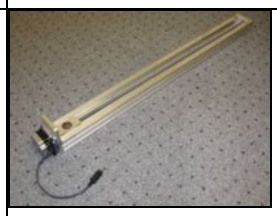
Standard LLS Slide Models

LLS915

This is our most popular LLS slide. Therefore it has been added as a standard product to our website. The slide may be purchased alone as part number LLS915 for use with your own motor controller, or with a T-MCA stepper motor controller from Zaber. To set up the T-MCA for use with the LLS915 slide, refer to the T-MCA user's manual and issue the instruction Restore Settings (cmd 36) using peripheral ID 7915. No change to the Maximum Range setting is required.

Custom LLS Slide Models

The setup instructions in the table below should provide a functional system but you may wish to fine tune the running current, hold current, and speed settings on the T-MCA to improve performance in your particular application. See the T-MCA User's Manual for information on how to do that.

Zaber Part Number	Picture	Motor	Instructions to set up	Travel	Travel/rev	Default microstep
LLS385-ENG1076		NM23A200-D	Restore Settings = 2231 Maximum Range = 485039	385 mm	10.16 mm	0.79375 um
LLS464-ENG1082		NM23A200-D	Restore Settings = 2231 Maximum Range = 2969600	464 mm	2 mm	0.15625 um
LLS584-ENG1133		NM23A200-D	Restore Settings = 2231 Maximum Range = 3950000	584 mm	2 mm	0.15625 um
LLS654-ENG1129		NM23A200	Restore Settings = 2231 Maximum Range = 4185600	654 mm	2 mm	0.15625 um
LLS693-ENG1130		NM23A200	Restore Settings = 2231 Maximum Range = 4435200	693 mm	2 mm	0.15625 um
LLS805-ENG1098		NM23A200-D	Restore Settings = 2231 Maximum Range = 1014173	805 mm	10.16 mm	0.79375 um
LLS1300-ENG1156		NM23A200	Restore Settings = 2231 Maximum Range =	1300 mm	2 mm	0.15625 um

	8320000			
LLS1016-ENG1161	NM23A200-D	Restore Settings = 2231 Maximum Range = 6502400	1016 mm	2 mm	0.15625 um

Warranty and Repair

For Zaber's policies on warranty and repair, please refer to the Ordering Policies

Standard products

Standard products are any part numbers that do not contain the suffix ENG followed by a 4 digit number. Most, but not all, standard products are listed for sale on our website. All standard Zaber products are backed by a one-month satisfaction guarantee. If you are not satisfied with your purchase, we will refund your payment minus any shipping charges. Goods must be in brand new saleable condition with no marks. Zaber products are guaranteed for one year. During this period Zaber will repair any products with faults due to manufacturing defects, free of charge.

Custom products

Custom products are any part numbers containing the suffix ENG followed by a 4 digit number. Each of these products has been designed for a custom application for a particular customer. Custom products are guaranteed for one year, unless explicitly stated otherwise. During this period Zaber will repair any products with faults due to manufacturing defects, free of charge.

How to return products

Customers with devices in need of return or repair should contact Zaber to obtain an RMA form which must be filled out and sent back to us to receive an RMA number. The RMA form contains instructions for packing and returning the device. The specified RMA number must be included on the shipment to ensure timely processing.

Email Updates

If you would like to receive our periodic email newsletter including product updates and promotions, please sign up online at www.zaber.com (news section). Newsletters typically include a promotional offer worth at least $100.

Contact Information

Contact Zaber Technologies Inc by any of the following methods:

Phone	1-604-569-3780 (direct) 1-888-276-8033 (toll free in North America)
Fax	1-604-648-8033
Mail	#2 - 605 West Kent Ave. N., Vancouver, British Columbia, Canada, V6P 6T7
Web	www.zaber.com
Email	Please visit our website for up to date email contact information.

The original instructions for this product are available at http://www.zaber.com/wiki/Manuals/LLS.

Specification	Value	Alternate Unit
Microstep Size (Default Resolution)	0.15625 µm	
Integrated Controller	No	
Recommended Controller	T-MCA (48 V) Recommended	
Travel Range	915 mm	36.024 "
Accuracy (unidirectional)	800 µm	0.031496 "
Repeatability	< 8 µm	< 0.000315 "
Backlash	< 100 µm	< 0.003937 "
Maximum Speed	15 mm/s	0.591 "/s
Minimum Speed	0.001465 mm/s	0.00006 "/s
Speed Resolution	0.001465 mm/s	0.00006 "/s
Encoder Type	None	
Peak Thrust	300 N	67.3 lb
Maximum Continuous Thrust	100 N	22.4 lb
Maximum Centered Load	100 N	22.4 lb
Maximum Cantilever Load	200 N-cm	283.2 oz-in
Guide Type	Dovetail slide	
Vertical Runout	< 75 µm	< 0.002953 "
Motor Temperature Rise	0 to 50 degrees C	
Motor Steps Per Rev	200	
Motor Type	Stepper (2 phase)	
Inductance	5.4 mH/phase	
Limit or Home Sensing	Magnetic home sensor	
Manual Control	On External Controller	
LED Indicators	No	
Vacuum Compatible	No	
RoHS Compliant	Yes	
CE Compliant	Yes	
Weight	6.92 kg	